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**SYSTEMS, METHODS AND APPARATUS FOR PREPARATION, DELIVERY AND  
MONITORING OF RADIOISOTOPES IN POSITRON EMISSION TOMOGRAPHY**

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**ABSTRACT OF THE DISCLOSURE**

In one aspect, systems, methods and apparatus are provided through which a dispensing station dispenses a large quantity of a radiotracer to one or more positron emission tomography imaging stations. In some aspects a quality control unit verifies the quality of the radiotracer. In some embodiments, components of the system are coupled by a local area network. In some aspects, each positron emission tomography imaging station includes an injector system, a physiological monitoring device, and a positron emission tomography scanner. All of the devices can be controlled by a computer system.